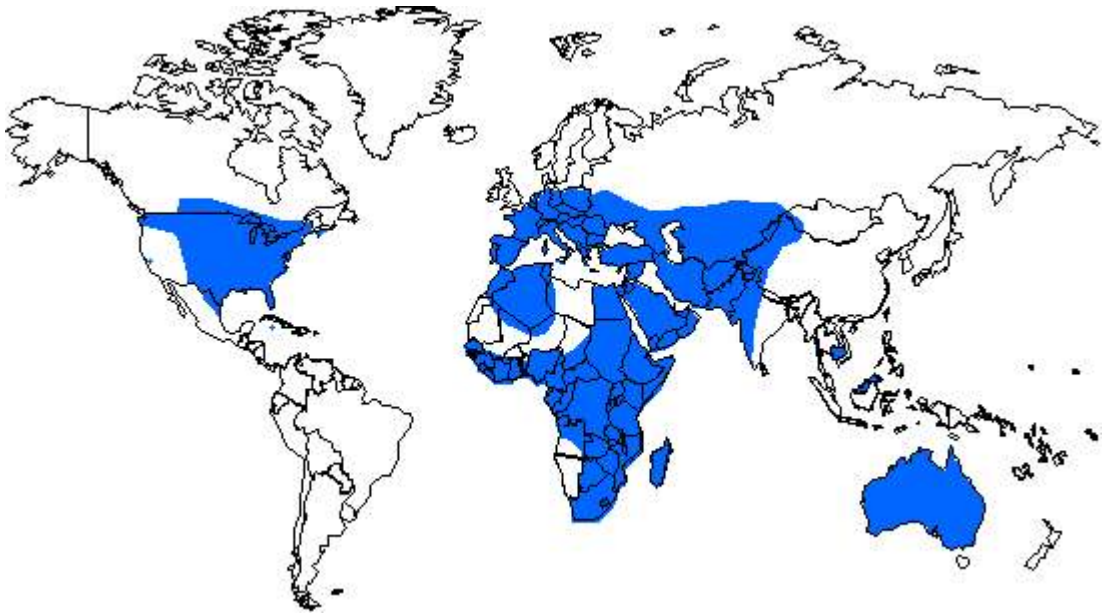
Preventing West Nile Illness

A fact sheet for municipal and community leaders 2003

WHERE IS WNV FOUND?

The General Distribution of West Nile Virus

West Nile virus (WNV), is found throughout much of the tropical regions of the world. It is reported from many countries in Africa, Europe, the Middle East, and since 1999, North America. Last year, the United States experienced the largest WNV meningoencephalitis outbreak ever recorded with over 4,000 cases and 284 deaths. It is expected that WNV will have reached all of the continental US as well as parts of Canada and Central and South America by the end of 2003. The virus has been in Mississippi for three years (2001-2003), and could reoccur annually. West Nile virus has now become the most important mosquito-borne viral disease in the US. It affects young and old, rich and poor alike, although the elderly are at greater risk for more severe illness.



WHY IS WNV IMPORTANT TO YOU AS A COMMUNITY LEADER?

While infection with West Nile virus often does not result in illness, in some instances it may cause illness either as; West Nile fever (WNF), a less serious form of illness, or the more severe West Nile meningoencephalitis (WNME). Human cases of West Nile illness may occur as isolated cases or in large outbreaks, as seen in 2002. Illness for some people may result in reduced work productivity, and occasionally, life-long physical and cognitive impairments. Up to 10% of people with severe WNME may die.

Local physicians need to be educated to identify and properly test persons exhibiting signs and symptoms of WNV illness.

TREATMENT OF WNV

Currently there is no specific treatment for WNV. Persons with mild illness often experience a self-limiting illness that resolves in 1-2 weeks. Persons with more severe illness may require hospitalization and supportive care.

WHAT IS WNV?

West Nile Virus is a type of virus that is spread through the bite of certain types of mosquitoes carrying the virus. The mosquito most commonly involved in transmission is, *Culex quinquefasciatus*, also referred to as the Southern House Mosquito. WNV is closely related to St. Louis encephalitis virus, which is all ready prevalent in the United States and transmitted by similar mosquitoes. WNV can infect humans, birds, mosquitoes, horses and rarely some other mammals.

As mentioned above, infection with WNV can result in serious disease, which may present in one of two forms: WN fever (WNF) and WN meningoencephaltis (WNME).

West Nile fever is a severe, flu-like illness affecting all ages, but rarely causing death.

West Nile meningoencephalitis is a second, more severe form, in which persons develop encephaltis, meningitis, or both, often requiring hospitalization. The elderly are at greater risk for this more severe form.

Persons suspected of having West Nile should see a doctor. Persons often complain of fever and headache, and may also exhibit any of the other complaints listed below.

CHARACTERISTICS OF WEST NILE FEVER (WNF)

- High fever
- Severe headache
- Pain behind the eyes which worsens with eye movement
- Muscle and joint pains

- Loss of sense of taste and appetite
- Measles-like rash over chest and upper limbs
- Nausea and vomiting
- Diarrhea
- Swollen lymph nodes

CHARACTERISTICS OF WEST NILE MENINGOECEPHALITIS (WNME)

- Symptoms similar to WNF
- High fever
- Severe headache
- Neck stiffness
- Confusion
- Disorientation
- Unaware of surroundings
- Difficulty walking
- Severe muscle weakness
- Paralysis
- Tremors
- Seizures
- Coma

WHO IS MOST AFFECTED?

Persons of all ages can be affected, but the elderly are greater risk for more severe illness.

THE WNV MOSQUITO

There are over 50 types of mosquitoes in Mississippi, but researchers believe that *Culex quinquefasciatus* is the mosquito primarily involved in the transmission of WNV. *Culex quinquefasciatus* mosquitoes carrying WNV and can transmit the virus to humans when they bite.

WHEN DO WNV MOSQUITOS BITE?

Culex quinquefasciatus mosquitoes usually bite between dusk and dawn, but other types of mosquitoes are present during the day.

WHERE DOES THE WNV MOSQUITO LIVE?

The female mosquito lays her eggs in containers that hold water in and around homes,schools and other areas in communities, such as stagnant drainage ditches and systems with large amounts of decaying organic matter. The larvae, known as wigglers, hatch from mosquito eggs, and live in water for about a week; they then change into a round pupal stage for one or two days, after which the adult mosquito emerges. During prime conditions, mosquitoes can mature from egg to adult in just one week.

WHERE DOES THE WNV MOSQUITO BREED?

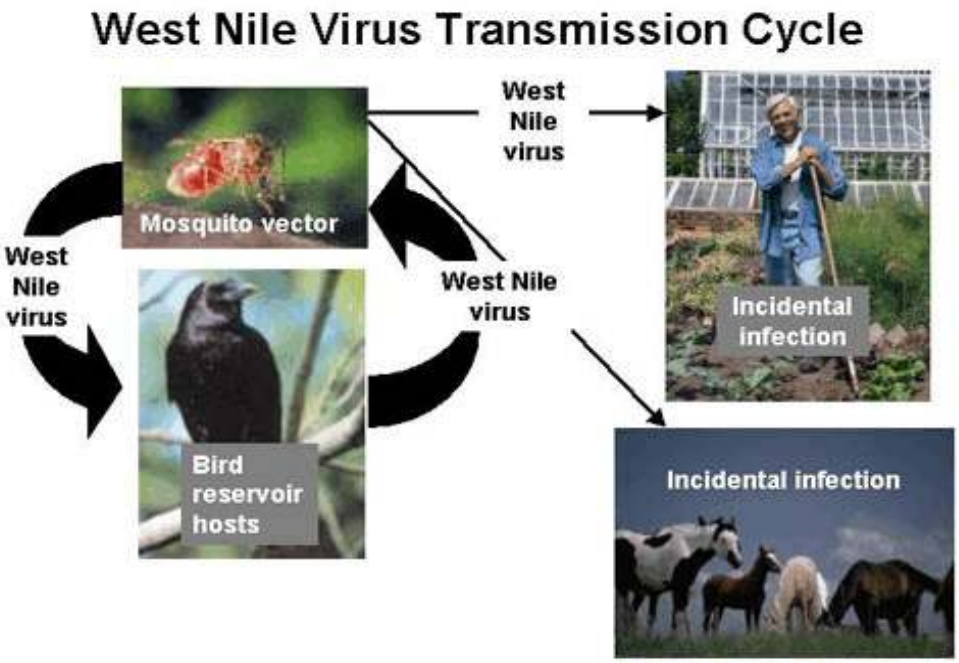
WNV mosquitoes breed in any water-catching or storage containers or stagnant water with organic debris (such as decaying plants, or human or animal waste), in shaded or sunny places. Favored breeding places are—

Barrels, drums, jars, pots, buckets, flower vases, plant saucers, tanks, bottles, tins, tires, pans, plant saucers and roof gutters, refrigerator drip pans, catch basins, drains, ditches, cement blocks, cemetery urns, bamboo stumps, tree cavities and a lot more places where rainwater collects or is stored.

HOW IS WNV SPREAD?

WNV is spread primarily by the bite of an infected female *Culex quinquefasciatus* mosquito which can pick up the WNV virus when taking a blood meal from a bird that is infected with WNV. The infected mosquito may then transmits the disease through its bite to other birds, people, or horses who in turn may become ill.

The diagram on the next page, illustrates this action.



HOW CAN WNV BE PREVENTED?

Since there is no drug to cure WN or vaccine to prevent it in humans, there are **two key measures** to prevent the spread of WNV.

1. Eliminate mosquito breeding places

- **Cover water containers**—Tight covers on water storage containers will prevent mosquitoes from laying their eggs there. If the cover is loose, mosquitoes can go in and out.
- At least once a week, empty water from flower pots, pet food and water dishes, birdbaths, swimming pool covers, buckets, barrels, and cans.
- **Septic tanks** — Failing wastewater treatment systems should be repaired.
- **Remove rubbish**—Garbage articles and other rubbish found around houses can collect rain water.
- **Utilize chemical control**— Larvicides purchased over-the-counter or used by mosquito control personnel can be placed in water containers or ditches to kill developing wigglers. Larvacides are safe and easy to use.

2. Prevent mosquito bites

People can protect themselves from mosquito bites by using any of the following means—

- Apply insect repellent sparingly to exposed skin. DEET (N, N-diethyl-3-methylbenzamide or N, N-diethyl-meta-toluamide) is the most commonly used ingredient in most repellents. The more DEET a repellent contains the longer time it can protect you from mosquito bites. A higher percentage of DEET in a repellent does not mean that your protection is better—just that it will last longer. DEET concentrations higher than 50% do not increase the length of protection. Choose a repellent that provides protection for the amount of time that you will be outdoors.
    - Avoid applying repellent to the face, mouth, or hands of children.
    - Whenever you use an insecticide or insect repellent, be sure to read and follow the manufacturer's DIRECTIONS FOR USE, as printed on the product.
- Spray clothing with repellents containing permethrin or DEET since mosquitoes may bite through thin clothing. Do not apply repellents containing permethrin directly to exposed skin. If you spray your clothing, there is no need to spray repellent containing DEET on the skin under your clothing.
- When possible, wear long-sleeved shirts and long pants when outdoors.
- Place mosquito netting over infant carriers when outdoors with infants.
- Consider staying indoors at dawn, dusk, and in the early evening, which are peak mosquito biting times.
- Install or repair window and door screens so that mosquitoes cannot get indoors.

3. Control WNV outbreaks

To help prevent a WNV outbreak, cities and counties can routinely practice mosquito control through a comprehensive integrated mosquito control program. This does not mean a city or county must perform adulticiding, as mosquito control includes a wide range of preventive measures. For more information on how to initiate or enhance a program visit the MSDH web site at www.msdh.state.ms.us and down load the document, Setting Up A Mosquito Control Program. Should a WNV outbreak occur within the community or municipality, it will be necessary for vector control measures to be carried out. These may include the use of insecticides applied through fogging or ultra-low-volume (ULV) spraying. This will reduce the numbers of adult mosquitoes, thereby halting the spread of the virus. Mosquito control personnel may want to notify members of the community in advance when spraying will be conducted so that persons sensitive to the compounds used can take proper precautions.

WHAT CAN COMMUNITY AND MUNICIPAL LEADERS DO TO STOP WNV?

- **Reliable rubbish collection.** Regular garbage collections may reduce potential mosquito breeding sites. The Department of Environmental Quality has a number of programs in place to assist communities both with financial and personnel resources. Contact DEQ regarding the Solid Waste Assistance Program for more information.
- **Garbage clean-up campaigns .** Garbage clean-up activities will have far reaching sustainable effects not only on mosquitoes, but also for houseflies, rodents and cockroaches. **The following are suggested:**
    - **Invite the municipality to be involved and to provide trucks and personnel.**
    - **Hold a community meeting to focus attention on clean-up days and their purpose.**
    - **Advertise clean-up days on radio and by posters.**
    - **Encourage schoolchildren to participate.**
    - **Get other community groups to participate such as "Keep Mississippi Beautiful."**
- **Community inspections to identify mosquito breeding sites .** Inspections will determine where mosquitos are breeding and help target mosquito control efforts. Inspectors can also teach neighboring household members how to prevent mosquito breeding.
- **Health education campaigns.** The first step in action against mosquitoes is to inform communities about WNV and what measures can be taken to combat it.

  Below are some suggestions for consideration:
    - **Hold community council meetings about WNV. Let participants decide if WNV is an important problem in the community.**
    - **Invite municipal health leaders to participate in actions decided on by community.**
    - **Organize training sessions for volunteers: films, exhibits and lectures from health workers.**
    - **Conduct local surveys to determine mosquito problem.**
    - **Use schoolchildren as agents for change to carry out inspections and teach about where mosquitoes live and how to control breeding.**
    - **Organize house-to-house surveys and "one-on-one" teaching about WNV and mosquitoes.**
    - **Publicize all such activites.**

- **Emergency preparedness.** Communities and municipalities can take preparatory

measures to guard against outbreaks of WNV. Plans of action can be formulated in conjunction with national, state and local health authorities. Such plans may include obtaining insecticide application equipment, provision of vehicles to carry out mosquito control and other measures deemed necessary by community and health leaders if an epidemic threatens.

- **School campaigns.** The use of schools for the promotion of health is vital. Students can be involved in clean-up and information campaigns. They can carry the message home to parents and neighbors. Students can begin by cleaning up their own school yard, then take action around their individual homes.
- **News and Public Service Announcements.** Use the fill-in-the-blank news release, and television and radio public service announcements provided by the MSDH, or develop your own. Then, hand deliver them to newspaper editors and radio public service directors in your area.
- **Media**. Contact local TV and radio station talk show producers and offer someone from your agency to talk about West Nile virus and the importance of mosquito reduction.
- Ask a community leader to talk with the media about West Nile virus and mosquito-reduction efforts taking place in your area. If he/she agrees, make all the necessary arrangements for the interview.
- Contact local newspaper editors and radio producers and ask them to mention activities your agency/neighborhood group is sponsoring regarding mosquito-reduction efforts in your area, as well as information about outreach activities pertaining to West Nile virus that are being conducted by your agency or community.
- **Community forums**. Encourage a local organization to schedule a special day and/or time for addressing West Nile virus and the importance of eliminating and reducing mosquito breeding areas in residents' yards, as well as public parks and other community areas. Help promote the event in the media.
- **Target special populations**. Contact senior citizens centers and ask if you can provide guest speakers to discuss the topic of West Nile virus. Help older adults understand the importance of implementing precautions that can reduce their risk of mosquito bites during the summer months.

FOR MORE INFORMATION

Call the WNV hot line

1-877-WST-NILE (1-877-978-6453)

or call the MSDH

Division of Epidemiology	601-576-7725
County Health Department	See the blue govt pages
District Health Department	See the blue govt pages

Visit the MSDH web site

www.msdh.state.ms.us

or the Centers for Disease Control and Prevention

www.cdc.gov

This document is based on information provided by WHO/HQ Geneva